Sulfolane Toxicity Meeting

Thursday, April 26, 2012 12:00 pm Alaska time

Attendees

Dr. Selene Chou - Agency for Toxic Substances and Disease Registry (ATSDR), Chair ATSDR MRL Workgroup

Jim Durant – ATSDR, Environmental Health Scientist

Dr. Dan Petersen – United States Environmental Protection Agency (EPA) NCEA-ORD, Toxicologist, Chemical Manager for the Sulfolane PPRTV

Dr. Scott Masten – National Toxicology Program (NTP), Director, Office of Nominations and Selection

Dr. Chad Blystone – NTP Toxicologist, Study Scientist

Dr. Elizabeth Whelan, PhD - National Institute for Occupational Safety and Health (NIOSH), Chief, Industrywide Studies Branch Division of Surveillance, Hazard Evaluations, and Field Studies

Don Fleming – NIOSH, Industrial Hygienist

Nim Ha - Alaska Department of Health and Social Services (DHSS), Health Educator

Dr. Ali Hamade – DHSS, Program Manager Section of Epidemiology

Shannon Fitzgerald – DHSS, Health Assessor

Ann Farris - Alaska Dept. of Environmental Conservation (DEC), Contaminated Sites Project Manager

Stephanie Pingree Buss –SPB Consulting, Toxicologist

Meeting Summary

1) Update and summary of EPA PPRTV – Dan Petersen (EPA)

    a) A Provisional Peer Reviewed Toxicity Value (PPRTV) represents a one year assessment using the same methods and reviewers as the IRIS program but can be done on a quicker timeline. PPRTVs do not go through interagency or Whitehouse review.
    b) Sulfolane PPRTV was released January 2012.
    c) The oral reference dose (RfD) for sulfolane is based on the Huntingdon Life Sciences 2001 study. The oral subchronic RfD is set at 0.01 mg/kg-d. The oral chronic RfD is set at 0.001 mg/kg-d.
    d) An inhalation subchronic reference concentration was also set at 0.02 mg/m^3 based on the Andersen et al. 1977 study.
    e) For the PPRTV, pharmokinetic modeling was not conducted.

f) The oral RfD was set based on the No Observable Adverse Effects Levels (NOAELs) from the Huntingdon Study. EPA did attempt benchmark dose modeling but the dose response curves failed to fit the modeling.
g) Standard EPA methods were used for applying composite uncertainty factors (UFs).

2) Alaska DEC current status – Ann Farris
   a) Superfund has developed drinking water benchmark for sulfolane in the Superfund Chemical Data Matrix (SCDM). Drinking water benchmark for sulfolane is set at 16 ppb.
   b) EPA is moving forward with ranking the North Pole Refinery site through the hazard ranking system.
   c) Currently DEC's position is to use the PPRTV in risk assessment and cleanup decisions for now until additional data is available.
3) Update on NTP studies – Scott Masten and Chad Blystone
   a) Received five letters supporting nomination of sulfolane to the National Toxicology Program (NTP).
   b) The Board of Scientific Counselors enthusiastically supported work on sulfolane and the study concept presented by Dr. Blystone.
      i) NTP moved forward with internal review of study design which is lead by Dr. Blystone.
      ii) The final internal review was completed on April 26th.
      iii) Initial study includes interspecies comparison in rat, mouse and guinea pig
         (1) Study will address question from Zhu et al. paper regarding species differences
         (2) The study will be a 28-day toxicity study in both male and females.
         (3) Will also look at histopathology, hematology and chemical measurements.
         (4) Study design will be sent to contractors who will be conducting the study.
         (5) From there NTP will evaluate the data and determine the next steps. Based on results may look further at immune toxicology and development studies.
            (a) There is not much current information in kinetics and NTP will also try to fill in those gaps.
      iv) Future studies will be longer in duration.
         (1) Possible studies include development one-generation study, immune studies and lactation exposure.
         (2) Follow-up study likely will include evaluation of bone marrow histology. A modified one-generational study may look at neurotoxicology assessment on animals, as well.
         (3) First study will be gavage dosing to control dose. Future studies would be dosing in drinking water.
      v) General timeline for implementation
         (1) First study should be conducted this year assuming no issues will chemistry (i.e analyzing the compound in the matrix).
         (2) Formal reporting of the data potentially completed by the end of next year or early 2014.
      vi) Final study in design is a chronic/carcinogenicity study
         (1) One-generational study would help determine doses for chronic study. Chronic study will provide information for teratology, reproduction, immunotox, etc.

(2) Chronic study would include perinatal exposure.

4) National Institute for Occupational Safety and Health (NIOSH) Introduction
   a) NIOSH is a partner in NTP program. NTP contacted NIOSH regarding potential occupational concerns.
   b) NIOSH is at the beginning stages of their investigation which is being led by Don Flemming.
   c) Currently NIOSH is reviewing information regarding sulfolane exposure in occupational settings. NIOSH will try to identify main users and who would be willing to work with NIOSH in occupational setting.
      i) Doesn't appear to be much information regarding occupational exposure in the literature.
      ii) NIOSH is in the preliminary stages of putting together a proposal to NTP to do this work.
   d) The study would be conducted in partnership with NTP and funding through NTP.
   e) DEC indicated that if funding is an issue for any of these studies, NIOSH, NTP and DEC should have a separate discussion to determine if the State might be able to help in some way.
      i) NIOSH indicated they commonly work with state health departments as a way to get access to facilities.
   f) DHSS asked if exposure during showering is of concern, based on comment from the NTP Board of Scientific Counselors concerns:
      i) EPA indicated they have a standard approach for evaluating showering for estimating exposure through that route. Dan stated he would conduct the calculations and provide to the group via Stephanie Buss.
      ii) NTP indicated they could do some studies that can bridge inhalation to main ingestion pathway but those currently aren't being proposed.
      iii) Both EPA and NTP indicated this currently is an area of uncertainty.